REMARKS

In the Office Action, the Examiner rejected claims 1-29 under 35 USC §103(a). This rejection is fully traversed below.

Claims 1, 9, 14, 21, 22 and 28 have been amended to further clarify the subject matter regarded as the invention. In addition, new claims 30-33 has been added, and claims 5, 6, 7, 12, 13, 23, 26 and 27 have been cancelled. Claims 1-4, 8-11, 14-22, 24, 25 and 28-33 are pending in the application. Reconsideration of the application is respectfully requested based on the following remarks.

REJECTION OF CLAIMS 1-29 UNDER 35 USC §103(a)

In the Office Action, the Examiner rejected claims 1-29 under 35 USC §103(a) as being anticipated by Brotman et al. (U.S. Patent No. 5,917,889). This rejection is fully traversed below.

The invention relates to an improved approach for resolving overloaded keys (i.e., ambiguous keys) in constrained computing devices. The invention utilizes a combination of ambiguous key entry and a corresponding voice input to particularly identify an entered key. The invention being claimed is distinguished from Brotman et al. below.

Claim 1 pertains to a method for inputting data in a character-by-character manner to a mobile communication device. The mobile communication device has a constrained keyboard with ambiguous keys and a microphone for picking up voice input. Among other things, claim 1 recites:

> (a) receiving voice input from a user using the microphone, the voice input pertaining to a single character;
> (b) detecting, substantially concurrently with said receiving (a), that one of the ambiguous keys of the keyboard has been selected by the user as a selected key;

Claim 1, lines 5-6.

In contrast, Brotman et al. pertains to a technique to capture a string of intended alphabetic or alphanumeric characters using indications of telephone keys. Accordingly, Brotman et al. is concerned with capturing a string of characters, whereas claim 1 is specifically limited to a method for inputting data in a character-by-character manner. In addition, the voice input being received from a user as recited in claim 1 pertains to but a single character. On the other hand, in Brotman et al., the user's voice

input pertains to the string as the user spells out the complete string that has previously been entered.

Furthermore, Brotman et al. fails to teach or suggest the detection of one of the ambiguous keys of the keyboard that is selected by the user substantially concurrently with the receiving of a voice input from the user. First, it should be noted that Brotman et al. pertains to an automated call processing environment that makes use of a telephone keypad which has ambiguous keys. However, as explained in Brotman et al., the caller enters a series of telephone keys corresponding to the alphabetic characters of a string to be captured, and then the caller utters each character of the string. (See Brotman et al., col. 3, lines 41-57, and see Fig. 2). Thereafter, a string of selected alphabetic characters is formed and presented to the caller, who can then signal whether the generated character string is correct or incorrect. It is clear from Fig. 2 of Brotman et al. that the system at step 640 prompts the user to utter the string of characters that have been depressed using telephone keys.

Hence, given that the system described in Brotman et al. receives the user voice input only after the user has been prompted to provide such, causes Brotman et al. to teach away from the invention recited in claim 1. Specifically, claim 1 clearly recites that the detection of the selection of one of the ambiguous keys is performed substantially concurrently with the receiving of the voice input from the user. Hence, in no way can Brotman et al. teach or suggest such limitations of claim 1. Indeed, Brotman et al. states at col. 4, lines 4-10 that the particular advantages of its method are the processing of an entire string of characters together. Thus, it can be said that Brotman et al. teaches against the invention recited in claim 1.

Accordingly, Brotman et al. fails to teach or suggest that each character would be processed separately, such that as an ambiguous key is selected (entered) by the user, a voice input pertaining to a single character provided by the user would be substantially concurrently received, whereby processing is performed in a character-by-character basis.

Additionally, claim 1 has been amended to substantially include the limitations previously recited in claims 6 and 7. Specifically, claim 1 recites:

> (c) obtaining reference patterns associated with the selected key, the reference patterns being a set of predetermined reference patterns selected from a plurality of reference patterns based on the selected key;

(d) comparing the voice input with the obtained reference patterns to produce comparison data; and

(e) identifying a character that was intended to be input by the user based on the comparison data, said identifying (e) of the character that was intended to be input by the user includes at least (e1) determining whether one of the obtained reference patterns matches the voice input based on the comparison data, and (e2) selecting the character from the plurality of the characters associated with the selected key in accordance with the determined one of the obtained reference patterns,

wherein said identifying (e) is synchronized with the detection of the selected key by said detecting (b), and

wherein the obtained reference patterns are speech reference patterns.

Claim 1, lines 10-21.

Previously, in rejecting claims 6 and 7, the Examiner referenced the flowchart of Fig. 2 of Brotman et al. In Fig. 2 of Brotman et al., a prompt 640 is presented to the user to spell a string that has been entered. In response, the user utters the characters comprising the string. According to Brotman et al., "[t]he system uses grammar rules and the uttered characters to aid in disambiguating the characters of the DTMF (or uttered number) string, generates a string of alphabetic characters and presents the generated string to the caller." Brotman et al., col. 3, lines 53-57. Further, any pattern matching that Brotman et al. might perform would not be synchronized with the selected key.

Therefore, it is submitted that claim 1 is patentably distinct from Brotman et al.

Claim 9 pertains to a computer readable medium having program code for disambiguating a key selection to a constrained input keyboard of a computing device. Among other things, claim 9 recites:

program code for receiving a voice input corresponding to a single one of the characters associated with the selected key, the voice input being received substantially concurrently with the detection of the selected key;

program code for determining the one of the characters that has been input based on the selected key and the voice input, said program code for determining includes at least

program code for obtaining reference patterns associated with the selected key;

program code for comparing the voice input with the obtained reference patterns to produce comparison data; and

program code for identifying the one of the characters that has been input based on the comparison data, and

wherein said program code for obtaining, said program code for comparing and said program code for identifying are initiated

with the detection of the selected key by said program code for detecting.

Claim 9, lines 7-21.

For similar reasons as noted above with respect to claim 1, it is submitted that claim 9 is also patentably distinct from Brotman et al. given that Brotman et al. not only fails to teach or suggest receiving a voice input substantially concurrently with the detection of a selected key, but also teaches away from such character-by-character processing. Therefore, it is submitted that claim 9 is patentably distinct from Brotman et al.

Claim 17 pertains to a key disambiguate system for an ambiguous key input device. The improvement recited in claim 17 involves "completely disambiguating a user's key input of a single action on a single one of the keys through use of a user's sound input pertaining to the intended character associated with the single one of the keys." Claim 17, lines 3-5. Here, the key disambiguate system again is processing single keys together with a user's sound input pertaining to the single one of the keys. Hence, for similar reasons to those noted above, it is submitted that Brotman et al. fails to teach or suggest the features of claim 17.

Claim 19 pertains to a key disambiguation system that, among other things, recites a key determination unit that "operates in response to the key selection event to determine the one of the characters being input based on the comparison data." Hence, the key determination unit determines the one of the characters being input. The key selection event is triggered by the user's selection of one of the keys of an ambiguous key input device, and the comparison data is produced by comparing a processed voice input with selected ones of reference source patterns in a pattern comparison unit. Hence, the key determination unit operates to identify the character being input on a character-by-character basis. Accordingly, for similar reasons to those noted above, it is submitted that claim 19 is patentably distinct from Brotman et al.

In addition, it is submitted that the Examiner's rejection of claim 19 does not rise to a *prima facie* rejection. In other words, the Examiner's brief mention of claim 19 on page 4 of the Office Action is inadequate to provide a *prima facie* rejection of claim 19 under 35 USC §103(a) for failure to consider each of the limitations recited in claim 19. Accordingly, it is believed that the rejection of claim 19 is defective for this reason as well as the patentable distinction noted above.

Among other things, claim 19 recites, "a data reduction unit coupled to said analog-to-digital circuit, said data reduction unit identifies distinguishing characteristics within the digital voice input as processed voice input" (claim 19, lines 5-7). Nothing in Brotman et al. teaches or suggests a data reduction unit as recited in claim 19. Additionally, claim 19 recites "a keyboard controller coupled to said ambiguous key input device, said keyboard controller detects a user's selection of one of the keys of said ambiguous key input device and invokes a key selection event" (claim 19, lines 10-13). There is nothing in Brotman et al. that teaches or suggests a keyboard controller as recited in claim 19. Still further, claim 19 recites "a key determination unit coupled to said pattern comparison unit, said key determination unit operates in response to the key selection event to determine the one of the characters being input based on the comparison data." (claim 19, lines 19-21). Here, it should be noted that the key determination unit operates in response to the key selection event produced by the keyboard controller. Nothing in Brotman et al. teaches or suggests a key determination unit that is operable in response to a key selection event as recited in claim 19.

Claim 21 pertains to a mobile communication device having a constrained keyboard with ambiguous keys and claim 22 pertains to a method for inputting data to a mobile communication device having constrained keyboard with ambiguous keys and a microphone for picking up voice input. Claim 21 recites limitations similar to those recited in claim 1, although in a different format. Accordingly, it is submitted that claim 21 is patentably distinct from Brotman et al. for at least similar reasons to those noted above with respect to claim 1.

In addition, it should be noted that several of the claim elements recited in claim 1 are means plus function elements in accordance with 35 USC §112, paragraph 6. As such, a proper rejection must consider the corresponding structure for these means provided within the patent application. Applicant believes that the failure of the Examiner to perform this analysis causes the rejection to fail to rise to the level of a *prima facie* rejection.

Claim 22 pertains to a method for inputting data to a mobile communication device having a constrained keyboard with ambiguous keys and a microphone for picking up voice input. Claim 22 recites various limitations that are similar to those recited in claim 1. Accordingly, it is submitted that claim 22 is patentably distinct from Brotman et al. for at least similar reasons to those noted above with respect to claim 1.

Based on the foregoing, it is submitted that claims 1, 9, 17, 19, 21 and 22 are patentably distinct from Brotman et al. In addition, it is submitted that dependent claims 2-4, 8, 10, 11, 14-18, 20, 23-33 are also patentably distinct from Brotman et al. for at least the same reasons. The additional limitations recited in the independent claims or the dependent claims are not further discussed as the above-discussed limitations are clearly sufficient to distinguish the claimed invention from Brotman et al.

Consider, for example, claim 28 which recites "wherein said receiving (a) of the voice input is provided by the user without prompting the user to provide a voice input." Brotman et al. clearly provides that the user utterance for the string of characters that have been previously input is not received until after the system prompts the user for the same. See Brotman et al., Fig. 2 at step 640. Hence, Brotman et al. clearly teaches away from receiving the voice input without prompting the user. Claim 29 recites a similar limitation. Thus, it is submitted that claims 28 and 29 are further patentably distinct from Brotman et al. for at least this additional reason. On page 4 of the Office Action, the Examiner suggests that, although not taught by Brotman et al., it would have been obvious for those skilled in the art "to discard the prompt, in Brotman teaching, for the purpose of speeding up the process." There is, however, nothing in Brotman et al. that would hint, motivate or suggest to those of ordinary skill in the art, that the prompting of the user for the utterance of a string of previously input characters could be eliminated. As discussed above, the teaching in Brotman et al. actually teaches against the elimination of the prompt because the stated advantages of the Brotman et al. method are to process the entire character string together and that doing so would be faster than a character-by-character approach.

Further, claim 30, which depends from claim 19 further recites that the key determination unit includes a circular buffer. Nothing in Brotman et al. teaches or suggests a circular buffer being included within a key determination unit as recited in claim 30. Claims 31-33 also reference a circular buffer. Again, Brotman et al. lacks any teaching or suggestion for a circular buffer.

Thus, it is respectfully requested that the Examiner withdraw the rejection of claims under 35 USC §103(a).

SUMMARY

It is submitted that claims 1-4, 8-11, 14-22, 24, 25 and 28-33 are patentably distinct from Brotman et al. Reconsideration of the application and an early notice of allowance are earnestly solicited.

If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicant hereby petitions for an extension of time which may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this Amendment is to be charged to Deposit Account No. 500388 (Order No. UWP1P029).

Respectfully submitted,
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